The country is relatively poor in glacial relicts, a few being found in the more elevated limestone areas. There is but one endemic seed plant in the country, *Bromus arduennensis*. This work, like others by the same author, is profusely illustrated by remarkable photographs. It is not too much to say that MASSART is the best of ecological photographers.—H. C. COWLES.

The Lower Cretaceous flora

A volume of the Maryland Geological Survey just issued (1911) contains what is perhaps the most complete systematic account, as yet, of the vascular flora of the Lower Cretaceous. The author, EDWARD W. BERRY, has prepared what is in effect a "manual of botany" for the Lower Cretaceous. To traverse what may be regarded as the rubbish of descriptions from all sorts of "impressions," and to obtain from it something of order, is an attempt that deserves commendation, however much opinion may vary as to the result. We have now before us, in convenient form (pp. 295) and illustrated by 76 plates, this most interesting flora as the paleobotanist, who is at the same time a geologist, looks at it.

In the Maryland deposits of the Lower Cretaceous, BERRY has recognized 145 species in 58 genera, and some appreciation of the vastly greater number of recorded species may be obtained from the long lists of synonyms that appear under many species. The only modern generic names in the list are *Selaginella*, *Equisetum*, *Pinus*, *Populus*, and *Sassafras*, though of course numerous names imply resemblances to modern genera. The pteridophytes include 47 of the species, and 44 of these are thought to belong to the Filicales, the other 3 being one species of *Selaginella* and two species of *Equisetum*. The 3 new genera of Filicales proposed are *Knowltonella* (Matoniaceae?), *Dicksoniopsis*, and *Dryopterites*.

The gymnosperms aggregate 63 species, 33 belonging to Bennettitales and 29 to Coniferales, the remaining one being a *Baiera* (Ginkgoales). Among the Bennettitales, *Ctenopsis* and *Dichotozamites* are proposed as new genera, the latter founded upon forms heretofore referred to *Sequoia*. The angiosperms are represented by 35 species, 3 of which (in 3 genera) are monocotyledons, and among these *Alismaphyllum* is a new genus. The 32 species (14 genera) of dicotyledons include *Nelumbites* as a new genus.

In another part of the volume, BERRY summarizes the Lower Cretaceous floras of the world (53 pp.), listing the recorded species in the various countries.

The volume should be very useful to that increasing number of botanists who are becoming interested in paleobotany, for the scattered and chaotic material of this period has been sifted and brought together in more available form.—J. M. C.

Phylogeny of plants

In 1907 LOTSY began the publication of his lectures on the phylogeny of plants, for the use of students of taxonomy. The first volume[7] contained over

[7] See BOT. GAZ. 43:421. 1907.

800 profusely illustrated pages dealing with thallophytes. The second volume[8] appeared in 1909, and contained over 900 pages dealing with the "Cormophyta Zoidogamia," which include, of course, the "polyciliate" gymnosperms. A third huge volume has now appeared,[9] containing over 1000 pages and representing only the first part on "Cormophyta Siphonogamia." The most impressive fact is the publication, within four years, of nearly 2800 pages, which demanded the traversing of an extensive range of literature for the compilation of facts and illustrations.

The present volume deals with Coniferales, Gnetales, and a part of the Angiosperms. There is no occasion for a detailed review, since the volume is an encyclopedia of our present knowledge in reference to these groups, and of the current speculations in reference to their phylogeny. A casual running through the pages indicates that the author has brought together a remarkably wide range of literature, has included a large number of illustrations from scattered contributions, and has organized his material in such a way as to make it easily accessible. The work as a whole will put the student in touch with the most important morphological contributions of recent years, and in this way will serve as a condensed library.—J. M. C.

MINOR NOTICES

Warming's Handbuch.—A third German edition of WARMING'S *Handbuch*, revised by MÖBIUS, has just appeared.[10] This text is so familiar that only the new features of the present revision need be noted. The changes concern chiefly the thallophytes, which MÖBIUS says "have diverged farthest from the original Danish conception," and especially the algae, in the presentation of which the new system of WILLE has been adopted. There are minor changes in other parts, such changes as may take advantage of a revision rather than demand it.

Perhaps the most interesting feature of the volume is the table representing the evolution of the plant kingdom, the blocks indicating the great groups, having the appropriate pigment colors. All the groups are definitely related, the plant kingdom arising from the flagellates, which give rise directly and independently to seven groups ("Chytridiaceae, Myxomycetes, Schizomycetes, Volvocaceae, Conjugatae, Diatomaceae, Peridineae"), the first four groups mentioned being responsible for all the rest. Anthocerotaceae are

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[8] See *ibid.* **49**:225. 1910.

[9] LOTSY, J. P., Vorträge über botanische Stammesgeschichte, gehalten an der Reichsuniversität zu Leiden. Ein Lehrbuch der Pflanzensystematik. Dritter Band: Cormophyta Siphonogamia. Erster Teil. Imp. 8vo. pp. 1055. *figs. 661.* Jena: Gustav Fischer. 1911. *M* 30.

[10] WARMING, EUG., Handbuch der systematichen Botanik. Deutsche Ausgabe. Dritte Auflage, von Dr. MARTIN MÖBIUS. 8vo. pp. xii+506. *figs. 616.* Berlin: Gebrüder Borntraeger. 1911.